

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Cancel claims 1-26.

27. (New) A chemical sensor comprising at least one sensor unit, a primary and a secondary substrate, the primary substrate comprises a primary cavity and a primary connecting surface at least partly surrounding said cavity, the at least one sensor unit is in the form of cantilevers, each comprising a piezoresistive element, said at least one sensor unit is protruding from the primary substrate and into the cavity of said primary substrate, the piezoresistive element or elements being electrically connected to primary connecting pads on the primary connecting surface, the secondary substrate comprises secondary connecting pads corresponding to the primary connecting pads, on a secondary connecting surface corresponding to the primary connecting surface, said primary connecting surface and said secondary connecting surface being mounted to each other so that said primary connecting pads and said secondary connecting pads are directly mounted to each other.

28. (New) A chemical sensor according to claim 27 wherein the sensor has one cantilever protruding from the primary substrate, the primary connecting surface of the primary surface totally surrounds the primary cavity, and the secondary substrate comprises an opening through the substrate to provide access to the cantilever.

29. (New) A chemical sensor according to claim 28 wherein the sensor has at least two cantilevers, each cantilever has its own primary cavity, the primary connecting surface of the primary surface totally surrounds the cavities of the primary surface, and the secondary substrate comprises openings through the substrate to provide access to the cantilevers.

30. (New) A chemical sensor according to claim 27 wherein the primary cavity is in the form of a primary channel section, said primary channel section extending perpendicular to the protruding direction of at least one cantilever.

31. (New) A chemical sensor according to claim 30 wherein the primary connecting surface is constituted by the surface along the lengthwise borders of the primary channel section.
32. (New) A chemical sensor according to claim 30 wherein the primary connecting surface is constituted by the surface along all of the borders of the primary channel section.
33. (New) A chemical sensor according to claim 30 wherein the secondary substrate comprises a secondary channel corresponding to the primary channel so that the primary and the secondary channels together form a flow channel section.
34. (New) A chemical sensor according to claim 33 wherein the flow channel section is closed except from an inlet in one of its ends and an outlet in the other one of its ends.
35. (New) A chemical sensor according to claim 33 wherein the flow channel section comprises at least one openings through either the primary or the secondary substrate.
36. (New) A chemical sensor according to claim 32 wherein the primary channel section is in the form of an oblong cavity, the secondary substrate comprises an oblong opening corresponding to the primary channel section, the primary connecting surface surrounding the primary channel section and the secondary connection surface along the oblong opening being mounted to each other to form a flow channel section.
37. (New) A chemical sensor according to claim 30 wherein the sensor comprises at least two cantilevers protruding from the primary substrate along the length of the primary channel section.
38. (New) A chemical sensor according to claim 27 wherein the primary connecting surface comprises a barrier line extending partly or totally around the primary cavity, said barrier line being in the form of a barrier line selected from the group of a) a barrier wall, b) a barrier ditch and c) both a barrier wall and a barrier ditch.

39. (New) A chemical sensor according to claim 27 wherein the secondary connecting surface comprises a cavity or an opening in the secondary substrate, said secondary substrate further comprising a barrier line extending at least partly around the cavity or at least partly around the opening in the secondary substrate.
40. (New) A chemical sensor according to claim 27 wherein the primary and the secondary connection surfaces are sealed in a liquid tight sealing.
41. (New) A chemical sensor according to claim 40 wherein the liquid tight sealing comprises materials are chosen from metal, polymer, glue and mixtures thereof.
42. (New) A chemical sensor according to claim 40 wherein the liquid tight sealing is at least partly provided by soldering.
43. (New) A chemical sensor according to claim 40 wherein the liquid tight sealing is at least partly provided by underfilling.
44. (New) A chemical sensor according to claim 27 wherein the secondary substrate is of a ceramic material.
45. (New) A chemical sensor according to claim 27 wherein the secondary substrate is a printed circuit board.
46. (New) A chemical sensor according to claim 27 wherein the secondary substrate is a micro chip.
47. (New) A chemical sensor according to claim 27 wherein said primary substrate is based on silicon, said primary cavity being in the form of an etched cavity forming a recess under at least one cantilever.
48. (New) A chemical sensor according to claim 27 wherein the sensor comprises a grounded electrode to ground the potential of a conductive fluid in at least one of the cavities of the primary substrate.